4.3 AIR QUALITY

This section describes environmental and regulatory settings related to air quality in the project area; identifies air quality impacts of the proposed Project, the Alternatives and the cumulative projects; and provides potential mitigation measures.

4.3.1 Environmental Setting

Regional Overview

The proposed project area is located within the South Central Coast Air Basin (SCCAB) in southwestern Santa Barbara County within the city of Goleta. The region has a Mediterranean climate characterized by mild winters, and warm, dry summers. The influence of the Pacific Ocean causes mild temperatures year-round along the coast, while inland areas experience a wider range of temperatures. Table 4.3-1 summarizes the climatic data collected at the weather station located closest to the project area: Santa Barbara Weather Station.

Table 4.3-1
Climatic Data for the Project Area

Parameter	Santa Barbara
Monthly Mean Range max. T	65.5–78.7°F (18.6–25.9°C)
Monthly Mean Range min. T	39.9–58.4°F (4.4–14.7°C)
Normal Daily T Range	40–79°F (4.4–26.1°C)
Average Annual Precipitation	18.6 inches (47.2 cm)
Mean Precipitation Range	0.02 inches (0.05 cm) (Jul)–4.07 inches (10.3 cm) (Feb)

Notes: T = temperature; °F = degrees Fahrenheit, °C = degrees Celsius; cm = centimeters.

Source: National Weather Forecast Office 2004; Western Regional Climate Center 2004.

Precipitation is confined primarily to the winter months. Occasionally, tropical air masses result in rainfall during summer months. Annual precipitation in the region varies widely over relatively short distances, primarily due to topographical effects. The long-term annual total precipitation along the coast is approximately 12 to 16 inches (31 to 41 centimeters [cm]), but on mountaintops, totals are nearly 30 inches (76 cm).

The regional climate is dominated by a strong and persistent high-pressure system, which frequently lies off the Pacific Coast (generally referred to as the East Pacific Subtropical High-Pressure Zone or Pacific High). The Pacific High shifts northward or southward in response to seasonal changes or the presence of cyclonic storms. In its

usual position to the west, the high produces an elevated temperature inversion. An inversion is characterized by a layer of warmer air aloft and cooler air near the ground surface. Normally, air temperature decreases with altitude. In an inversion, the temperature of a layer of air increases with altitude. The inversion acts like a lid on the cooler air mass near the ground, preventing pollutants in the lower air mass from dispersing upward beyond the inversion "lid." This phenomenon results in higher concentrations of pollutants trapped below the inversion.

Atmospheric stability is a primary factor that affects air quality in the study region. Atmospheric stability regulates the amount of air exchange (referred to as turbulent mixing) both horizontally and vertically. Restricted atmospheric turbulence, that is, a high degree of stability, and low wind speeds are generally associated with higher pollutant concentrations. These conditions are typically related to temperature inversions that cap the pollutants emitted below or within them.

Airflow plays an important role in the movement of pollutants. Regional winds are normally controlled by the location of the Pacific High. Wind speeds typical of the region are generally light, another factor that contributes to higher levels of pollution, since low wind speeds minimize dispersion of pollutants. The sea breeze is typically northwesterly throughout the year; however, local topography causes variations. During summer months, these northwesterly winds are stronger and persist later into the night. When the Pacific High weakens, a Santa Ana condition can develop, with air traveling westward into the county from the east. Stagnant air often occurs at the end of a Santa Ana condition, causing a buildup of pollutants offshore. Prevailing wind speeds on the coast range from 9 to 11.5 miles per hour (mph) (14.5 to 18.5 kilometers per hour [km/h]), with maximum gusts up to 70 to 80 mph (113 to 129 km/h).

Several types of inversions are common to the area. In winter, weak surface inversions occur, caused by radiation cooling of air in contact with the cold surface of the earth. During spring and summer, marine inversions occur when cool air from over the ocean intrudes under the warmer air that lies over the land. During the summer, the Pacific High can cause the air mass to sink, creating a subsidence inversion.

Topography plays a significant role in affecting the direction and speed of winds. During the months of May to October, inversions commonly form in the project area. Year round, light onshore winds hamper the dispersion of primary pollutants, and the orientation of the inland mountain ranges interrupt air circulation patterns. Pollutants

become trapped, creating ideal conditions for the production of secondary pollutants in the coastal zones.

Air Quality

Air quality is determined by measuring ambient concentrations of air pollutants that are known to have adverse health effects. For regulatory purposes, standards have been set for some of these air pollutants, and they are referred to as "criteria pollutants." For most criteria pollutants, regulations and standards have been in effect, in varying degrees, for more than 25 years, and control strategies are designed to ensure that the ambient concentrations do not exceed certain thresholds. Another class of air pollutants that are subject to regulatory requirements is called hazardous air pollutants (HAPs) or air toxics. Substances that are especially harmful to health, such as those considered under the U.S. Environmental Protection Agency's (EPA) hazardous air pollutant program or California's AB 1807 and/or AB 2588 air toxics programs, are considered to be air toxics. Regulatory air quality standards are based on scientific and medical research. These standards establish minimum concentrations of an air pollutant in the ambient air that could initiate adverse health effects.

For air toxics emissions, however, the regulatory process usually assesses the potential impacts to public health in terms of "risk," such as the Air Toxics "Hot Spots" Program in California, or the emissions may be controlled by prescribed technologies, as in the new Federal approach for controlling hazardous air pollutants.

The degree of air quality degradation for criteria pollutants is determined by comparing the ambient pollutant concentrations to health-based standards developed by government agencies. The current National Ambient Air Quality Standards (NAAQS) and California Ambient Air Quality Standards (CAAQS) for "criteria pollutants" are listed in Table 4.3-2. Ambient air quality monitoring for criteria pollutants is conducted at numerous sites throughout California. Table 4.3-3 presents relevant data from several monitoring stations located in the project area. A summary of the attainment status for Santa Barbara County is provided in Table 4.3-4. Ambient air quality in the County is generally good, i.e., within applicable ambient air quality standards, with the exception of particulate matter with an aerodynamic diameter of ten microns or less (PM_{10}), and ozone (O_3).

Table 4.3-2
Ambient Air Quality Standards for Criteria Pollutants

Pollutant	Averaging Time	California [1, 3] Standards	National Standards [2]	
			Primary [4]	Secondary [3, 5]
O_3	1-hour [2] 8-hour [1]	0.09ppm (180μg/m^3) 0.07ppm (137μg/m^3)	0.12ppm (235μg/m^3) 0.08ppm (157μg/m^3)	0.12ppm (235μg/m^3) 0.08ppm (157μg/m^3)
CO	8-hour 1-hour	9.0ppm (10mg/m^3) 20.0ppm (23mg/m^3)	9.0ppm (10mg/m^3) 35ppm (40mg/m^3)	NS NS
NO_2	Annual Avg. 1-hour	NS 0.25ppm (470μg/m^3)	0.053ppm (100μg/m^3) NS	0.053ppm (100μg/m^3) NS
Sulfur Dioxide, SO_2	Annual Avg. 24-hour 3-hour 1-hour	NS 0.04ppm (105μg/m^3) NS 0.25 ppm (655μg/m^3)	0.03ppm (80μg/m^3) 0.14ppm (365μg/m^3) NS NS	NS NS 0.5ppm (1,300μg/m^3) NS
PM_{10}	Ann.Arith.Mean 24-hour	20μg/m^3 50μg/m^3	50μg/m^3 150μg/m^3	50μg/m^3 150μg/m^3
$PM_{2.5}$	Ann.Arith.Mean 24-hour	12μg/m^3 NS	15μg/m^3 65μg/m^3	15μg/m^3 65μg/m^3
Sulfates (SO_4^{-2})	24-hour	25μg/m^3	NS	NS
Lead (Pb) [6]	30-day Avg. Calendar Qtr.	1.5μg/m^3 NS	NS 1.5μg/m^3	NS 1.5μg/m^3
H_2S	1-hour	0.03ppm (42μg/m^3)	NS	NS
Vinyl Chloride [6]	24-hour	0.010ppm (26μg/m^3)	NS	NS
Visibility Reducing Particles	1 Observation	Insufficient amount to reduce the prevailing visibility [7] to less than 10 miles when the relative humidity is less than 70 percent (CA only).		

Notes: ppm = parts per million by volume (micromoles of pollutant per mole of gas) μg/m^3 = microgram/cubic meter; mm = millimeter; NS = No Standard; Avg. = Average; Ann. Arith. Mean = Annual Arithmetic Mean.

[1] California standards for O_3, CO, SO_2 (1-hour), NO_2, $PM_{2.5}$ and PM_{10} are values that are not to be exceeded. SO_4^{-2}, Pb, H_2S, Vinyl Chloride, and visibility-reducing particles standards are not to be equaled or exceeded. Sulfates are pollutants that include SO_4^{-2} ion in their molecule. CA 8-hr O_3 standard is effective as of May 17, 2006.

[2] National Standards, other than O_3 and those based on annual averages or annual arithmetic means, are not to be exceeded more than once a year. The O_3 Standard is attained when the expected number of days per calendar year with maximum hourly average concentrations above the standard is equal to or less than one. National 1-hour O_3 standard was revoked on June 30, 2005.

[3] Concentration expressed first in units in which it was promulgated. Equivalent units in parentheses are based upon reference temperature of 25°C and a reference pressure of 760 mm of mercury (1,013.2 millibar). All measurements of air quality are to be corrected to these reference conditions.

[4] National Primary Standards: The levels of air quality necessary, with an adequate margin of safety, to protect the public health. Each state must attain the primary standards no later than three years after that state's implementation plan is approved by the EPA.

[5] National Secondary Standards: The levels of air quality necessary to protect the public welfare from any known or anticipated adverse effects of a pollutant. Each state must attain the secondary standards within a "reasonable time" after the implementation plan is approved by the EPA.

[6] The California Air Resources Board (CARB) has identified lead and vinyl chloride as 'toxic air contaminants' with no threshold level of exposure for adverse health effects determined. These actions allow for the implementation of control measures at levels below the ambient concentrations specified for these pollutants.

[7] Prevailing visibility is defined as the greatest visibility, which is attained or surpassed around at least half of the horizon circle, but not necessarily in continuous sectors.

Source: CARB 2003.

1

Table 4.3-3
Ambient Air Quality Summary for the Project Area, 2002 through 2004

Pollutant		Year	Maximum Observed Concentration (# of Days Standard was Exceeded) [8]	
			Goleta - Fairview	Santa Barbara
Ozone, ppm	1-hour 8-hour	2002	0.070 (0) 0.060 (0)	0.076 (0) 0.061 (0)
	1-hour 8-hour	2003	0.097 (1 day) 0.071 (0)	0.079 (0) 0.070 (0)
	1-hour 8-hour	2004	0.092 (0) 0.087 (1 day)	0.095 (1 day) 0.085 (1 day)
CO, ppm	8-hour	2002	1.13 (0)	NA
	8-hour	2003	1.13 (0)	2.33 (0)
	8-hour	2004	0.95 (0)	1.93 (0)
NO_2, ppm	1-hour Annual Average	2002	0.063 (0) 0.011	NA NA
	1-hour Annual Average	2003	0.051 (0) 0.011	0.059 (0) NA
	1-hour Annual Average	2004	0.043 (0) NA	0.063 (0) NA
SO_2, ppm	1-hour Annual Average	2002	0.001 (0) NA	NA NA
	1-hour Annual Average	2003	0.003 (0) NA	NA NA
	1-hour Annual Average	2004	0.001 (0) NA	NA NA
$PM_{2.5}$, $\mu g/m^3$	24-hour Ann. Arith. Mean	2002	NA NA	NA NA
	24-hour Ann. Arith. Mean	2003	NA NA	24.0 (0) NA
	24-hour Ann. Arith. Mean	2004	NA NA	22.2 (0) NA

Notes: The values are provided in the units promulgated by the EPA; NA = No data available (the monitoring station does not monitor this pollutant); Ann. Arith. Mean = Annual Arithmetic Mean.

[8] Number or percent of exceedances of the most restrictive standard (usually, the State Standard).

Source: CARB 2005a.

1

Table 4.3-4
Attainment Status of Santa Barbara County

1-hour O_3 [9]		Fed 8-hour O_3	CO		NO_2		SO_2		Fed $PM_{2.5}$	PM_{10}	
CA	Fed		CA	Fed	CA	Fed	CA	Fed		CA	Fed
N	NA	A	A	A	A	U/A	A	U/A	U/A	N	U

Notes: CA = California State Standards; A = Attainment of Standards; N = Nonattainment; U = Unclassified; U/A = Unclassified/Attainment, NA = not applicable.

[9] National 1-hours O_3 standard was revoked on June 30, 2005 with all applicable designations.

Source: CARB 2004.

Criteria pollutants are also categorized as inert or photochemically reactive, depending on their subsequent behavior in the atmosphere. By definition, inert pollutants are relatively stable, and their chemical composition remains stable as they move and diffuse through the atmosphere. The photochemical pollutants may react to form secondary pollutants. For these pollutants, adverse health effects may be caused directly by the emitted pollutant or by the secondary pollutants.

Inert Pollutants

Criteria pollutants that are considered to be inert include carbon monoxide (CO), nitrogen dioxide (NO_2), sulfur dioxide (SO_2), PM, lead, sulfates, and hydrogen sulfide (H_2S).

Carbon monoxide is formed primarily by the incomplete combustion of organic fuels. Santa Barbara County is in attainment of the California and national one-hour and eight-hour CO standards. High values are generally measured during winter, when dispersion is limited by morning surface inversions. Seasonal and diurnal variations in meteorological conditions lead to lower values in summer and in the afternoon.

Nitric oxide (NO) is a colorless gas formed during combustion processes that rapidly oxidizes to form nitrogen dioxide (NO_2), a brownish gas. Santa Barbara County is in attainment for the California and national nitrogen dioxide standards. The highest nitrogen dioxide values are generally measured in urbanized areas with heavy traffic.

Sulfur dioxide (SO_2) is a gas produced primarily from combustion of sulfurous fuels by stationary and mobile sources. Santa Barbara County has been in attainment of the California and national sulfur dioxide standards for the last ten years.

The largest PM_{10} emissions appear to originate from soils via roads, construction, agriculture, and natural, windblown dust. Other sources of PM_{10} include sea salt,

particulate matter released during combustion processes, such as those in gasoline and diesel vehicles, and wood burning. Also, nitrogen oxides (NO_x) and sulfur oxides (SO_x) are precursors in the formation of secondary PM_{10}. Santa Barbara County is in exceedance of the California 24-hour PM_{10} standard (see Table 4.3-4). Santa Barbara County is Unclassified for the recently added State $PM_{2.5}$ Standard.

Lead is a heavy metal that in ambient air occurs as a lead oxide aerosol or dust. Since lead is no longer added to gasoline or to paint products, lead emissions have been reduced significantly in recent years. The County is in attainment with the NAAQS and the CAAQS for lead.

Sulfates are aerosols, i.e., wet particulate, that are formed by sulfur oxides in moist environments. They exist in the atmosphere as sulfuric acid and sulfate salts. The primary source of sulfate is from the combustion of sulfurous fuels. The County is in attainment for the California sulfate standard, and there has been a steady decrease in ambient concentrations in the recent decade.

Hydrogen sulfide (H_2S) is an odorous, toxic, gaseous compound that can be detected by humans at very low concentrations. Concentrations detectable by smell (this can vary from 0.5 parts per billion [ppb] detected by 2 percent of the population to 40 ppb, qualified as annoying by 50 percent of the population) are significantly lower than concentrations that could affect human health (2 ppm [2,000 ppb] can cause headaches and increased airway resistance in asthmatics; inhalation of 600 ppm is lethal). The gas is produced during the decay of organic material and is also found naturally in petroleum and natural gas. The County is in attainment of the H_2S standard.

Photochemical Pollutants

Ozone is formed in the atmosphere through a series of complex photochemical reactions involving oxides of nitrogen (NO_x), reactive organic compounds (ROC), and sunlight, occurring over a period of several hours. Since ozone is not emitted directly into the atmosphere, but is formed as a result of photochemical reactions, it is classified as a secondary or regional pollutant. Because these ozone-forming reactions take time, peak ozone levels are often found downwind of major source areas.

Santa Barbara County is not in attainment for the State 1-hour ozone standard. Santa Barbara County is in attainment for the Federal 8-hour ozone standard.

Toxic Air Contaminants

Toxic Air Contaminants (TACs) are hazardous air pollutants that are known or suspected to cause cancer, genetic mutations, birth defects, or other serious illnesses to people. TACs may be emitted from three main source categories: (1) industrial facilities; (2) internal combustion engines (stationary and mobile); and (3) small "area sources," such as solvent use. The California Air Resources Board (CARB) publishes lists of Volatile Organic Compound (VOC) species profiles for many industrial applications and substances.

Generally, TACs behave in the atmosphere in the same general way as inert pollutants, i.e., those that do not react chemically, but preserve the same chemical composition from point of emission to point of impact. The concentrations of toxic pollutants are, therefore, determined by the quantity and concentration emitted at the source and the meteorological conditions encountered as the pollutants are transported away from the source. Thus, impacts from toxic-pollutant emissions tend to be site-specific, and their intensity is a function of constantly changing meteorological conditions. The worst meteorological conditions that affect short-term impacts are low wind speeds, highly stable air mass, and constant wind direction.

Regional Emissions

Emissions within the County are estimated annually by the Santa Barbara Air Pollution Control District (APCD). Table 4.3-5 lists the estimated emissions by source category.

Table 4.3-5
1999 Emission Inventory for Santa Barbara County

Emission Sources [10]	CO tons/yr (mt/yr)	ROC tons/yr (mt/yr)	NO_x tons/yr (mt/yr)	SO_2 tons/yr (mt/yr)	PM_{10} tons/yr (mt/yr)
Stationary	11,416 (10,356)	3,059 (2,775)	2,001 (1,815)	835 (757)	414 (375)
Area-Wide	7,426 (6,736)	3,271 (2,967)	551 (499)	8 (7)	6,443 (5,844)
Mobile	76,087 (69,024)	9,379 (8,508)	15,319 (13,897)	751 (681)	370 (335)
Natural	10,298 (9,342)	28,930 (26,244)	1,365 (1,238)	0	2,025 (1,837)
All Sources	95,227 (86,388)	44,639 (40,495)	19,236 (17,450)	1,594 (1,446)	9,253 (8,394)

Notes: mt/yr = metric tons per year.

[10] Petroleum activities are a part of Stationary Sources.

Source: SBCAPCD 2001.

In Santa Barbara County, the highest contributors to the ROC emissions are natural sources, primarily uncontrolled seeps of different oil and gas constituents. Carbon

monoxide and NO_x emissions mostly occur due to mobile sources, e.g., on-road vehicles. The majority of SO_x emissions come from mineral processes, specifically from diatomaceous earth processing. PM_{10} emissions are mostly due to road dust (area-wide sources).

Project Facilities Permits and Baseline Emissions

The proposed Project's air quality baseline includes existing emissions from both the permitted and exempt equipment at the project facilities, including the Ellwood Marine Terminal (EMT), project vessels, and equipment on the barge Jovalan. The permitted emissions for the facilities, including mobile sources such as the tug and assist vessels that are required to move the barge Jovalan, are covered under the appropriate APCD Permits to Operate (PTOs): PTO No. 8232-R5 (SBCAPCD 2004a) for the EMT and vessels, and PTO No. 8233-R5 (SBCAPCD 2004b) for the barge Jovalan (also see Appendix D, Air Quality). Some equipment is exempt under the APCD Rules (SBCAPCD 1999). However, this equipment still produces air pollutant emissions, although small and not requiring an APCD permit, that need to be analyzed under the CEQA. The APCD Rules under which equipment would be considered exempt are summarized in Section 4.3.2, Regulatory Setting.

Table 4.3-6 identifies the categories of project equipment sources.

Table 4.3-6
Project Facilities Emission Sources

EMT and Vessels	Barge Jovalan
Permitted Equipment and Emissions: - Fugitive ROC from the two oil storage tanks - Fugitive ROC from piping components and pump seals - ROC, NO_x, CO, PM_{10} and SO_2 from tug vessel main and auxiliary engines, and generator engine - ROC, NO_x, CO, PM_{10} and SO_2 from assist vessel main engine, and generator engine - ROC, NO_x, CO, PM_{10} and SO_2 from Emergency response vessel engine	**Permitted Equipment and Emissions:** - ROC, NO_x, CO, PM_{10} and SO_2 from three Vapor Recovery Unit (VRU) Internal combustion (IC) engines exhaust products - ROC emissions displaced during filling of the barge Jovalan holds (tanks) with crude oil - Fugitive hydrocarbons from various piping and pressure relief device components - Fugitive emissions from sump
Permit-exempt Equipment: - None	**Permit-exempt Equipment:** - ROC, NO_x, CO, PM_{10} and SO_2 from diesel-fired reciprocating IC engine with 89 brake-horsepower rating or less

Table 4.3-7 summarizes the current emissions from the project facilities. These are the facility emissions reported annually to the APCD that are calculated based on the hours of operation and fuel consumed. Air pollutant emissions that make up the Project's air quality baseline are currently below the permitted limits (SBCAPCD 2004a and 2004b). Emissions levels for the year 2004 are still being compiled by the APCD.

Table 4.3-7
EMT Facilities Current and Permitted Emissions

Facility	NO_x tons/yr (lbs/day)	ROC tons/yr (lbs/day)	CO tons/yr (lbs/day)	SO_2 tons/yr (lbs/day)	PM_{10} tons/yr (lbs/day)
2001 Emissions					
Ellwood Marine Terminal and Vessels	4.84	0.99	0.50	0.06	0.29
Barge Jovalan	0.34	1.23	0.38	0.26	0.11
Total	5.18	2.22	0.88	0.32	0.40
2002 Emissions					
Ellwood Marine Terminal and Vessels	2.99	3.14	0.33	0.06	0.18
Barge Jovalan	1.05	1.14	0.37	0.11	0.12
Total	4.04	4.28	0.70	0.17	0.30
2003 Emissions					
Ellwood Marine Terminal and Vessels	4.98	1.98	0.56	0.07	0.31
Barge Jovalan	1.01	1.13	0.37	0.11	0.12
Total	5.99	3.11	0.93	0.18	0.43
Permitted Emissions					
EMT and Vessels, PTO No. 8232-R5	(3,789.07) 131.27	(223.44) 10.63	(413.53) 14.51	(46.88) 1.62	(220.87) 7.75
Barge Jovalan, PTO No. 8233-R5	(139.37) 5.74	(184.76) 8.63	(50.79) 2.01	(3.30) 0.13	(11.38) 0.49
Total Permitted	(3,928.44) 137.01	(408.20) 19.26	(464.32) 16.52	(50.18) 1.75	(232.25) 8.24
Maximum Exempt Emissions					
Barge Jovalan, PTO No. 8233-R5	3.2	0.2	0.5	0.0	0.2

Notes: Totals may not add up due to rounding. There is no exempt equipment associated with PTO No. 8232-R5. 1 ton = 0.9 metric ton. 1 pound (lb) = 0.45 kilogram (kg).

Source: SBCAPCD 2004a; SBCAPCD 2004b.

The project facilities PTOs also specify maintenance, reporting, and record keeping requirements imposed by the APCD. Some of the more important requirements include:

- Assist the APCD in investigating any alleged nuisance odor complaints;
- Conduct inspections for fugitive hydrocarbon leaks, record any leaks, repairs and re-inspections;
- Report to the APCD the facility permit or any APCD Rule or regulation non-compliance; and
- Report to the APCD any breakdowns, with any excess emissions associated with the breakdowns.

In accordance with PTO 8232-R5, Venoco funds and maintains an ambient air monitoring station approved by the APCD located at Coal Oil Point. The station monitors the following parameters: ambient air concentrations of total hydrocarbons, H_2S, SO_2 and total reduced sulfur, wind speed and direction, wind variation, and ambient temperature.

To control odorous and ROC emissions, the barge Jovalan has a Vapor Recovery Unit (VRU) that includes a caustic H_2S scrubber system and a refrigeration hydrocarbon removal system. The VRU is designed to collect and control the headspace vapors produced during crude oil loading as vapor in the barge holds is displaced by oil. The details on this system are given in Section 2.3.7, Vapor Recovery System.

The EMT and barge Jovalan facilities (classified as one emissions source — EMT stationary source) were issued Part 70 permits on December 20, 2000, each permit with a 5-year term (in the serious non-attainment area for ozone, a statutory emissions source with the Federal potential to emit [PTE] exceeding 50 tons/year [45 metric tons/year] requires a Part 70 Federal permit). Santa Barbara County was re-designated as an ozone attainment area on August 8, 2003. In the ozone attainment area, only those sources with the Federal PTE of 100 tons/year (91 metric tons/year) or more require a Part 70 Federal permit. Currently, the Federal NO_x PTE for the EMT stationary source is nearly 141 tons/year (128 metric tons/year), i.e., greater than 100 tons/year (91 metric tons/year) emissions; thus, the EMT remains a major stationary source. However, on August 28, 2003, the 'permittees' requested exemption from Part 70 permitting requirements based on their demonstrated compliance with APCD Rule 370 (see details below), namely, a demonstration of their actual emissions being less than 50 tons/year (45 metric tons/year) from the EMT stationary source. The Part 70 permitting requirements for the EMT stationary source was rescinded by the APCD on August 29, 2003. However, unless the EMT stationary source reduces its Federal

potential to emit to 99 tons/year (90 metric tons/year) or below, it will need to remain in compliance with APCD Rule 370 to retain its exemption from Part 70 permitting.

Currently, neither the EMT nor the barge Jovalan provide emission reduction credits[11] (ERCs) to other emission sources. These facilities do not require any ERCs to operate.

Odor Complaints associated with the Project Facilities

The EMT and barge Jovalan historically have produced odors, which have generated complaints from the public. Typically, the APCD receives at least 20 nuisance odor complaints per year associated with emissions from the EMT area. From the period August 2003, to April 2005, there was one instance of a series of odor complaints attributed to the EMT operations—the April 2005 oil storage tanks internal floating roof leaks.

The APCD conducts investigations to determine if the odor complaints are associated with the EMT facilities. The APCD is required to conduct an investigation if there are five or more complaints at a time. The results of the APCD odor complaint investigations for the last 24 months were analyzed as part of this report. The locations where complaints originated were analyzed against data on wind direction and wind speed at the time of the complaint. In 40 percent of the investigated odor complaint cases, the complaint location was downwind of the EMT facilities. In these cases, the APCD was unable to confirm the source. In 60 percent of the cases, however, the wind direction and wind speed deem it unlikely that the odor was originating from the EMT or the barge, because the location of the odor complaint was upwind from the EMT and the barge.

West Campus Air Monitoring Station on Coal Oil Point monitors Total Hydrocarbons, SO_2 and H_2S concentrations in the atmosphere. The typical concentration of H_2S measured at the station is 0 to 2 ppb. Spikes of 3 ppb are recorded several times per year. Only one to four spikes over 3 ppb are recorded at the station per year (based on the data from 2002 to 2005).

Barge loadings and spikes in the H_2S concentration recorded at the West Campus Air Monitoring Station were plotted on the same graph for the year 2004 (see Figure D-4 in

[11] Emission Reduction Credit (ERC) – an actual emission reduction of specific type and quantity that is registered with the APCD in accordance with Rule 806. The ERC Certificate is a document that represents emission reduction credits registered in the Source Register. It is transferable and is initially issued by the APCD to a source that qualifies its actual emission reductions for registration in the Source Register by meeting the requirements of Rule 806.

Appendix D). This was done to understand if there is a relation between the H_2S concentration spikes and the barge loadings. The analysis indicated that there is no obvious correlation between the H_2S concentration spikes and barge loadings. The concentration of H_2S measured during barge loadings ranged from 0 to 2 ppb. Higher readings of H_2S in 2004 were recorded during times when the barge Jovalan was not moored at the EMT.

Odor complaints for the area near the EMT and the Ellwood Onshore Facility (EOF) for the years 2002 through 2004 were also plotted against spikes in H_2S concentration measured at the West Campus Air Monitoring Station. Out of 104 complaints, only two are in direct correlation with H_2S concentration spikes over 2 ppb. There were no complaints when the H_2S concentration was at 4 to 9 ppb. Most of the recorded complaints (approximately 80 percent) correlate with H_2S concentrations of 1 to 2 ppb. Approximately 20 percent of complaints were placed during the time when the station reported 0 ppb H_2S. This could be due to the location of the odor source and the meteorological conditions.

Some odor events could be attributed to natural gas seeps present in the vicinity of Platform Holly and the barge Jovalan mooring location. Natural gas seeps are a documented phenomenon that is due to the leaking of oil and gas from the sea-floor (see Section 4.1.1, Natural Oil Seeps). Venoco operates two seep tents located approximately 1 mile (1.6 kilometers [km]) southeast of Platform Holly. The seeping gas and oil bubble up from the ocean floor and are captured by the seep tents. The tents were designed specifically to minimize air and water pollution and collect the naturally seeping gas and oil. Natural seeps occur in other locations where they are not captured but escape into the atmosphere, and create odors if H_2S is present in the gas.

Odor complaints associated with the EMT, EOF, and Platform Holly facilities have been documented by the APCD and by the Santa Barbara County Fire Department (2000) for the years 1997 through 1999. These data indicated that the EMT generated more than six documented odor events per year and an additional four from the EOF during this time period. Due to these frequent odor complaints, the APCD issued Abatement Order No. 99-6(A) on April 14, 1999. The Abatement Order included measures that targeted reduction and elimination of nuisance odors from the named facilities. The following measures were included in the APCD Abatement Order and are applicable to the EMT and barge Jovalan:

- When loading the barge Jovalan, once the volume in the barge reaches 40,000 barrels (6,359 m^3) of crude oil, the loading rate shall not exceed 2,100 barrels (334 m^3) per hour;

- When loading the barge Jovalan, the VRU vessel shall be operated no warmer than negative 150°F (-101°C);

- Test the caustic solution on the barge Jovalan and replace it if the H_2S concentration exceeds 10 ppm in the VRU vapors at the outlet of the scrubber, or replace the solution before each run of the barge;

- Augment the air monitoring equipment at the Coal Oil Point station to incorporate new parameters for total reduced sulfur, H_2S, and sulfur dioxide emissions and connect this equipment to the APCD's data acquisition system; and

- If any barge hold pressure safety valve (PSV) vents to the atmosphere, loading shall be shut down. Venoco shall determine the cause for venting and submit a comprehensive written report to the County's System Safety and Reliability Review Committee (SSRRC) (see Section 4.2, Hazards and Hazardous Materials, for a description of SSRRC).

The odor event that occurred in April 2005 was attributed to corrosion damage of the crude oil storage tanks' internal floating roofs (Matrix 2005a and 2005b). Corrosion created holes in the roofs of both tanks so that oil leaked out and created puddles on the top of the internal floating roofs. There was an increase of nuisance odor complaints from the public during this time. The odors were confirmed by the APCD inspectors.

The tanks were drained and inspected internally for corrosion. The inspection revealed more corrosion damage in the bottom of the tanks (PRI 2005). During the work on the tanks, the APCD received and confirmed more nuisance odor complaints. As of July 2005, the required repairs on Tank 8265 have been completed and the tank is operational, repairs on Tank 8264 have been completed; the testing that is required before the tank can be put back in service is in progress.

During the months of April and May 2005, when the tank roof leaks were detected and the tanks were being repaired, the West Campus Air Monitoring Station recorded only one hourly H_2S level (on April 1, 2005) that was higher than typical concentrations, at 9

ppb. At other times during the two months when the repairs were taking place, H_2S concentrations were within the typical 0 to 2 ppb range.

Health Risk Associated with the Project Facilities

The most recent Health Risk Assessment (HRA), conducted in accordance with AB 2588, was completed in 1994 using 1991 air emissions data. Since that time, several changes to combustion equipment and components were made at the project facilities; therefore, the 1994 HRA results may no longer represent the baseline conditions.

As part of this report, an HRA was conducted on the current emissions as detailed in the Annual Emission Inventories reported to the APCD. The analysis used emissions data from 2001, the latest year for which the complete data set was available. The analysis was conducted using the most recent version of the Hotspots Analysis and Reporting Program (HARP), Version 1.2, developed by CARB (CARB 2005b). All the equipment covered under both project facilities' PTOs was included in the analysis. Meteorological conditions, emission factors, and emission sources' parameters, e.g., stack dimensions, gas velocities, exhaust temperatures, equipment coordinates, etc., used in the modeling were the same as were used in the 1994 HRA, where possible. Because of the short duration of the Project, i.e., lease extension till 2013, a 9-year exposure scenario was used in the modeling. The assumptions used and the details of the input and results of the analysis are presented in Appendix D, Air Quality. Table 4.3-8 summarizes the results. Currently, at the closest receptor, the cancer health risk is below the significance threshold of 10 in a million; chronic health index (HI) and acute HI are both below the significance threshold of one. The results are presented in Table 4.3-8 along with the results of the 1994 analysis. The most recent Cancer Risk and Acute and Chronic Health Indexes (HIs) isopleths are shown in Figures D-1a, D-2a and D-3a, Appendix D, Air Quality.

Table 4.3-8
1994 and 2003 HRA Results

Emissions Year (Analysis Year)	Cancer Risk per million (Threshold = 10 per million)	Non Cancer Risk Index	
		Chronic (Threshold = 1)	Acute (Threshold = 1)
1991 (1994)	0.40	0.00 CNS	0.90 Resp
2003 (2005)	1.44	0.0057	0.412

Note: CNS = central nervous system; Resp = respiratory system.

Source of the 1994 HRA data: SBCAPCD 1994.

4.3.2 Regulatory Setting

Federal, State, and local agencies have established standards and regulations that govern the proposed Project. A summary of the regulatory setting for air quality is provided below.

Federal

The Federal Clean Air Act of 1970 directs the attainment and maintenance of the NAAQS. The 1990 Amendments to this Act included new provisions that address air pollutant emissions that affect local, regional, and global air quality. The main elements of the 1990 Clean Air Act Amendments are summarized below:

- Title I Attainment and maintenance of NAAQS;
- Title II Motor vehicles and fuel reformulation;
- Title III Hazardous air pollutants;
- Title IV Acid deposition;
- Title V Facility operating permits (describes requirements for Part 70 permits);
- Title VI Stratospheric ozone protection; and
- Title VII Enforcement.

The U.S. EPA is responsible for implementing the Federal Clean Air Act and establishing the NAAQS for criteria pollutants. In 1997, the EPA adopted revisions to the Ozone and Particulate Matter Standards contained in the Clean Air Act. These revisions included a new eight-hour ozone standard and a new particulate matter standard for particles below 2.5 microns in diameter. These standards were suspended, however, when in May 1999, the U.S. Court of Appeals for the District of Columbia remanded the new ozone standard. In January 2001, the EPA issued a Proposed Response to Remand, in which it stated that the revised ozone standard should remain at 0.08 ppm. In February 2001, the U.S. Supreme Court upheld the constitutionality of the Clean Air Act as the EPA had interpreted it in setting health-protective air quality standards for ground-level ozone and particulate matter. In April 2004, the EPA issued their Final Nonattainment Area Designations for Eight-Hour Ozone Standard.

State

California Air Resources Board (CARB).

The CARB established the CAAQS. Comparison of the criteria pollutant concentrations in ambient air to the CAAQS determines State attainment status for criteria pollutants in a given region. CARB has jurisdiction over all air pollutant sources in the state; it has delegated to local air districts the responsibility for stationary sources and has retained authority over emissions from mobile sources. CARB, in partnership with the local air quality management districts within California, has developed a pollutant monitoring network to aid attainment of CAAQS. The network consists of numerous monitoring stations located throughout California that monitor and report various pollutants' concentrations in ambient air.

California Clean Air Act (CCAA) (California Health and Safety Code, Division 26).

This act went into effect on January 1, 1989, and was amended in 1992. The CCAA mandates achieving the health-based CAAQS at the earliest practical date.

Air Toxics "Hot Spots" Information and Assessment Act of 1987 (California Health & Safety Code, Division 26, Part 6).

The Hot Spots Act requires an inventory of air toxics emissions from individual facilities, an assessment of health risk, and notification of potential significant health risk.

California Health & Safety Code sections 25531–25543,The Calderon Bill (SB 1889), ().

These sections set forth changes in the following four areas: (1) provides guidelines to identify a more realistic health risk; (2) requires high-risk facilities to submit an air toxic emission reduction plan; (3) holds air pollution control districts accountable for ensuring that the plans will achieve their objectives; and (4) requires high-risk facilities to achieve their planned emission reductions.

Local

Local APCDs in California have jurisdiction over stationary sources in their respective areas and must adopt plans and regulations necessary to demonstrate attainment of Federal and State air quality standards. As directed by the Federal and State Clean Air Acts, local air districts are required to prepare plans with strategies for attaining and maintaining State and Federal ozone standards. In the project area, air quality rules and regulations are promulgated by the APCD. In order to ultimately achieve the air

quality standards, the rules and regulations limit emissions and permissible impacts from the proposed Project. Some rules also specify emission controls and control technologies for each type of emitting source. The regulations also include requirements for obtaining an Authority To Construct (ATC) permit and a PTO.

Santa Barbara County Air Pollution Control District

The APCD has jurisdiction over air quality attainment in the Santa Barbara County portion of the SCCAB. All aspects of the proposed Project and Alternatives occurring in Santa Barbara County must obtain a APCD permit, if applicable. The APCD also has jurisdiction over Outer Continental Shelf (OCS) sources located within 25 miles (40 km) of the seaward boundaries of the State of California (Rule 903). Increases in emissions of any non-attainment pollutant or its pre-cursor from a new or modified project that exceed the thresholds identified in the APCD Rule 801.E are required to be mitigated. Other applicable rules are summarized below.

Rule 201, Permits Required – Specifies the permits required for construction or operation of equipment that emits air contaminants.

Rule 202, Exemptions to Rule 201 – Lists equipment categories that are exempt from the requirements to obtain an APCD permit (exempt from Rule 201). Listed below is the equipment category listed in Rule 201 that is applicable to the EMT facilities:

- A permit shall not be required for piston-type internal combustion engines with a manufacturer's maximum rating of 100 brake horse power (bhp) or less. (One diesel internal combustion engine on the barge Jovalan is rated at 89 bhp.)

Rule 303, Nuisance, and Rule 310 – Odorous Sulfates – These rules prohibit air emissions that cause a nuisance, e.g., odorous sulfates.

Rule 370, Potential to Emit - Limitations for Part 70 Sources – Describes the limitations that allow the major source facilities with emissions below the described limitations be exempt from Part 70 permit as a federally major emissions source.

Rule 802, Nonattainment Review – For new or modified emission sources, this rule specifies emission limits that would trigger emission offsets and Best Available Control Technology (BACT) requirements.

4.3.3 Significance Criteria

Operational Thresholds

The operational air quality impacts of the proposed Project would be significant if the EMT does not comply with the terms of its PTOs (PTO Nos. 8232-R5 and 8233-R5) granted by the APCD. Non-permitted emissions could have a significant, adverse impact if they:

- Contribute to an exceedance of localized CO emissions in excess of the State Ambient Air Quality Standard, i.e., 20 ppm for 1 hour or 9 ppm for 8 hours;
- Result in emissions which exceed the following emission thresholds:
  - ROC, 15 tons/year (14 metric tons/year), 80 lbs/day (36 kg/day),
  - NO_x, 15 tons/year (14 metric tons/year), 80 lbs/day (36 kg/day), and
  - PM_{10}, 15 tons/year (14 metric tons/year), 80 lbs/day (36 kg/day);
- Result in emissions of NO_x or ROC exceeding 25 lbs/day (11 kg/day) from motor vehicles only;
- Allow land uses that create objectionable odors or expose sensitive receptors to objectionable odors;
- Expose sensitive receptors (including residential areas) or the general public to substantial levels of toxic air contaminants such that:
  - Potential excess cancer cases are greater than 10 per million individuals exposed (cancer risk exceeds 1×10^{-5});
  - The Health Hazard Index from the project emissions exceeds one (1). The Health Hazard Index is a cumulative index that accounts for potential exposures to all hazardous chemicals related to the Project. The Health Hazard Index for a single hazardous chemical is a ratio of estimated potential exposure to a chemical over the chemical-specific health threshold; or
- Potentially result in the accidental release of acutely hazardous air emissions.

Cumulative impacts would be deemed significant if the proposed Project is found to have an individually significant air quality impact.

Construction Thresholds

Emissions from construction activities are normally short-term. Currently, neither the County nor the APCD have daily or quarterly quantifiable emission thresholds established for short-term construction emissions. PM_{10} impacts from dust emissions should be discussed and standard mitigation measures implemented, e.g., watering, as required in the 1979 Air Quality Attainment Plan (SBCAPCD 2005). However, should the construction emissions exceed 25 tons (23 metric tons) per year of any criteria pollutant, the owner of the stationary source would have to provide emission reductions per APCD Rules 202 and 804; the APCD would find this to be significant.

4.3.4 Impact Analysis And Mitigation

Air quality impacts result from increased emissions associated with continuing operation of the project facilities at levels above current operations. Increases of emissions would occur from operational increases in crude oil throughput at the crude oil tanks and increased barge trips and loadings. No construction is proposed and therefore there would be no construction-related emissions.

Impact AQ-1: Increase in Emissions from Operations

Proposed Project could potentially result in increased operational emissions at the EMT and the barge Jovalan (Potentially Significant, Class II).

Impact Discussion

The annual number of loadings would increase from the current 23 to 88 and oil throughput would increase to 13,000 barrels per day (BPD) (2,067 m^3 per day). This would increase the annual emissions of the proposed Project over the current operations. The current and estimated project emissions are summarized in Table 4.3-9 (also see Table 4.3-7). The following assumptions were used in estimating the Project's annual emissions:

- Worst case project fugitive emissions currently occurs 365 days per year for the EMT tanks, pump seals, valves, and connections, this is because the piping, pipeline, pumps, and connectors are filled with oil or oil vapors most of the time;

- Project fuel use by the tug, assist and emergency response vessels would increase proportionately with the annual number of trips to the EMT from 23 in 2003 to 88 for the Project;

- Project fuel use by the barge Jovalan VRU would increase proportionately with the annual number of loadings from 23 in 2003 to 88 for the Project; and

- Project normal operations would include the assist vessel generator engine being shut down, as currently occurs. For the last several years the reported fuel use of the assist vessel generator engine is zero.

The worst contributors to the EMT facilities' emissions are the tug and assist vessel engines and the barge Jovalan VRU engine (the tug and assist vessels are under the EMT PTO). Currently, the tug and assist vessels are moored and do not run their engines (except for the on-board generators) while the barge is being loaded. The differences between the current and proposed Project's annual emissions are summarized in Table 4.3-9 (for more details see Appendix D, Air Quality).

Table 4.3-9
Project Facilities Current and Estimated Project Emissions

Facility	NO_x tons/yr	ROC tons/yr	CO tons/yr	SO_2 tons/yr	PM_{10} tons/yr
Current Average Emissions					
Ellwood Marine Terminal	5.00	1.19	0.56	0.06	0.30
Barge Jovalan	1.56	1.93	0.37	0.03	0.12
Total	*6.56*	*3.12*	*0.94*	*0.09*	*0.41*
Project Emissions					
Ellwood Marine Terminal	19.13	3.11	2.15	0.24	1.14
Barge Jovalan	5.97	7.60	1.43	0.10	0.44
Total	*25.10*	*10.72*	*3.58*	*0.34*	*1.58*
Difference in Current and Project Emissions					
Ellwood Marine Terminal	14.13	1.92	1.59	0.18	0.84
Barge Jovalan	4.41	5.68	1.06	0.08	0.33
Total	***18.54***	*7.60*	*2.65*	*0.25*	*1.17*
Significance Thresholds	15.00	15.00	na	na	15.00
Are Thresholds Exceeded?	**Yes**	No			No

Notes: 1 ton = 0.9 metric ton.

The increase in annual NO_x emissions due to the proposed Project would be above the significance thresholds, assuming that operations at the EMT would continue as currently occur, i.e., the tug and assist vessel engines are shut down most of the time during loading. Therefore, the Project's operational air impacts would be potentially significant (Class II).

If the Project is implemented, annual emissions would increase, however, daily emissions would not change, because barge daily operations during loadings would be identical to current operations.

Mitigation Measures

AQ-1a. Vessel Emission Reduction. If the proposed Project requires more than 75 barge trips/loadings in any consecutive 12-month period, the Applicant shall implement an emission reduction program that would consist of the following:

(1) Hire a tug and/or assist vessels that have combined NO_x emissions approximately 20 percent lower than the current tug and assist vessels, and

(2) Reduce running time of the tug vessel generator engine(s) during the time when the tug vessel is moored at the EMT and is not moving or mooring the barge. The time reduction shall be at least 20 percent.

AQ-1b. Limitation of the Generator Use. The operators of the tug and assist vessels shall shut off the main and auxiliary engines during loading when not moving or mooring the barge Jovalan.

Rationale for Mitigation

The annual operational emissions would be lower if the annual number of barge loadings is lower than the expected 88 loadings/year. It was estimated that at the maximum number of loadings at 75 per year, the Project's NO_x, ROC and PM_{10} emissions would be below the thresholds of 15 tons (14 metric tons) per year of each of the three pollutants. However, an increase of the barge trips/loadings over 75 per year would result in NO_x emissions above the threshold.

If the generators on the tug and assist vessels are shut off when the vessels are not assisting the barge, the daily emissions from the generators would be reduced.

Impact AQ-2: Odor Emissions from Operation

Proposed Project could result in increased barge loadings and increased potential for an oil spill, and thus could potentially result in increased nuisance odor events (Potentially Significant, Class II).

Impact Discussion

The areas immediately adjacent to the EMT are used for recreational purposes. In addition, there are residential areas and a school within 0.5 mile (0.8 km) of the onshore and offshore portions of the EMT. Thus, releases of odorous compounds such as H_2S or petroleum gases could create nuisance odors, which would be considered a significant impact.

Odors from the EMT and the barge Jovalan could originate from several sources. Barge loading typically does not emit odorous compounds due to the implemented controls, i.e., vacuum on the holds during loading, vapor control using the VRU, and caustic treatment of H_2S. However, if the pressure safety valves (PSVs) on the barge holds open to the atmosphere due to an overpressure event, which is triggered by pressure of 14 inches of water above atmospheric (0.03 atmospheres gauge or 0.51 pounds per square inch, gauge [psig]), odorous compounds would be released to the atmosphere. Any accidental releases, such as crude spills (see Section 4.2, Hazards and Hazardous Materials), could also result in odor events. For instance, confirmed nuisance odor events occurred when the EMT storage tanks had leaks in the floating roofs and crude oil accumulated on the top of the floating roofs.

Although there are many recorded odor nuisance complaints in the area, and historically the EMT and barge are a demonstrated source of odors (Santa Barbara County Fire Department 2000), recent APCD analysis has demonstrated that the EMT and barge have only one odor event directly attributed to their operations.

Potential oil spills could create objectionable odors due to evaporation of odorous compounds (H_2S and ROC) from the pilled oil surface. Any oil spills could generate nuisance odors and thus odor complaints.

The increased barge loadings under the proposed Project could potentially increase releases of odorous compounds to the atmosphere. The Project would also increase the potential for a oil spill. Any increase in odorous compounds releases would be a significant impact as it violates APCD Rule 303 (Class II).

Mitigation Measures

AQ-2a. Emission Control Devices on Tanks. The Applicant shall install vapor control devices, e.g., carbon canisters or equivalent devices, on the vents of the crude oil storage tanks. The Applicant shall submit an appropriate replacement schedule for the vapor control devices to the APCD for its review and approval.

AQ-2b. Emission Control Devices on the Barge Jovalan. The Applicant shall install proximity switches on the PSVs on the barge Jovalan, to prevent the lifting of the PSVs due to overpressure. The switches shall be telemetered to the control room on the barge and trigger an alarm. The operating procedures shall require immediate shutdown of the pumps in case of overpressure.

Implementation of **MMs HM-1a**, **HM-1b**, **HM-4a**, and **HM-6a** would also reduce potential for accidental releases of odorous compounds.

Rationale for Mitigation

Vapor control, such as carbon canisters, on the vents of the oil storage tanks would eliminate or significantly reduce the amount of vapors that produce nuisance odors, because the vapors that would exit through the vents would be trapped by carbon. Installation of proximity switches would reduce the time needed to shutdown the loading, or correct the situation, to prevent the lifting of the PSVs and thus reduce the potential release of odorous compounds. Implementation of **MM HM-1a** would reduce the amount of H_2S in the oil and thus vapor phase, thereby reducing H_2S concentration in the air in case of a release. Implementation of the measures outlined in Section 4.2 Hazards and Hazardous Materials would reduce the potential for accidental releases.

Impact AQ-3: Increase in Health Risk

The proposed Project could potentially result in increased HAP emissions from the EMT and barge Jovalan and thus increase health risk (Less Than Significant, Class III).

Impact Discussion

Health risk associated with the proposed Project was evaluated using the most recent version of Hotspots Analysis and Reporting Program (HARP 1.2). Baseline and worst

case proposed project emissions were evaluated. Worst case represents operation of the EMT and barge at 88 loadings per year with oil throughput of 13,000 BPD (2,067 m^3 per day). The results are summarized in Table 4.3.10 (for more details see Appendix D, Air Quality). At the most affected receptor (the residence located at Coal Oil Point is the closest downwind from the barge Jovalan mooring location), excess cancer risk, and acute and chronic HIs would be below the thresholds of 10 cases per million and 1 HI, respectively. Cancer risk and chronic HI would increase approximately 3.8 times with the proposed Project.

Note that the acute HI would not change with the Project because this index is driven by the hourly emissions from the project facilities. Hourly emissions would not change with the proposed Project (see discussion for Impact **AQ-1**), therefore this HI would not change.

Table 4.3-10
Baseline and Proposed Project HRA Results – Coal Oil Point Residences

Emissions used	Cancer Risk per million Threshold = 10	Non Cancer Risk Index	
		Chronic Threshold = 1	Acute Threshold = 1
Baseline (2003)	1.44	0.0057	0.412
Project	5.51	0.0217	0.412

Isopleth figures for cancer risk, chronic HI, and acute HI are shown in Appendix D, Technical Air Quality Appendix, pages D-15 through D-17. This Appendix also presents details of the modeling analysis and the impacts to the surrounding areas.

Because the proposed Project's worst case emissions are below the respective thresholds for cancer risk and HIs, the health risk impact would be less than significant (Class III). Although the Project would increase the potential for oil spills, and oil spills release pollutant emissions that are hazardous to health, an oil spill is a temporary event that would not influence population for a long term that results in health risks, thus there would be no impacts to health risk from an increase in the potential for oil spills from the Project.

Table 4.3-11
Summary of Air Quality Impacts and Mitigation Measures

Impact (Impact Class)	Mitigation Measures
AQ.1: Operation Emissions (Class II).	**AQ-1a.** Vessel Emission Reduction. **AQ-1b.** Limitation of the Generator Use.

AQ.2: Odor Emissions from Operations (Class II).	**AQ-2a.** Emission Control on Devices the Tanks **AQ-2b.** Emission Control Devices on the Barge Jovalan.
AQ.3: Increase in Health Risk (Class III).	No mitigation is required.

4.3.5 Impacts Of Alternatives

No Project Alternative

Under this Alternative the current emissions from the EMT facilities would remain until an alternative method of oil transportation is selected. This alternative may result in a reduction in air emissions, or an increase, depending on the alternative method of oil transportation.

Truck Transportation

Under this scenario, operations of the EMT, vessels, and barge would cease, thus there would be no emissions from the EMT facilities. Impacts **AQ-1**, **AQ-2,** and **AQ-3** would be eliminated.

Impact AQ-4: Emissions from Truck Transportation

Transportation by trucks would result in increased NO_x emissions (Significant, Class I).

Impact Discussion

If this method of crude oil transportation is selected under the No Project Alternative, emissions would be produced due to fuel combustion by the trucks transporting oil. Annual emissions would be greater than current operations, but peak daily emissions from the trucks would be lower than the peak day emissions from current operations

Estimated annual emissions are summarized in Table 4.3-12. The increase in NO_x emissions due to trucking would exceed the APCD threshold of 15 tons (14 metric tons) per year. Therefore, this air quality impact would be potentially significant (Class I).

It was also estimated that if the oil transportation does not exceed 12,200 BPD (1,940 m^3 per day), increase in NO_x emissions would be within the 15 tons (14 metric tons) per year threshold.

The daily emissions from trucking are below the baseline (see Table 4.3-12). However, the Project would change the mode of transportation (from barge to trucks) and therefore the emissions would be from motor vehicles only. Emissions of ROC or NO_x in excess of 25 lbs/day (11 kg/day) from motor vehicles would represent an adverse significant impact (Class I).

Table 4.3-12
Summary of Emissions from Truck Transportation

Annual Emissions Emissions Category	**NO_x tons/yr**	**ROC tons/yr**	**CO tons/yr**	**SO_2 tons/yr**	**PM_{10} tons/yr**
Emissions from Truck Transportation	23.13	5.30	24.52	0.11	1.69
Current Emissions	6.56	3.12	0.94	0.09	0.41
Increase with truck Transportation	16.57	2.18	23.58	0.02	1.28
Significance Threshold	15.00	15.00	na	na	15.00
Exceeds Threshold?	**Yes**	No	—	—	No
Peak Daily Emissions Emissions Category	**NO_x lbs/day**	**ROC lbs/day**	**CO lbs/day**	**SO_2 lbs/day**	**PM_{10} lbs/day**
Emissions with Truck Transportation	126.74	29.05	134.36	0.58	9.27
Current Emissions	570.44	198.00	81.40	7.73	35.88
Increase (decrease) with Truck Transportation	-443.70	-168.95	52.96	-7.16	-26.61
Significance Threshold	80.00	80.00	na	na	80.00
Exceeds Threshold?	No	No	—	—	No
Emissions from Motor Vehicles Threshold	25.00	25.00	na	na	na
Exceeds Motor Vehicles Threshold?	**Yes**	**Yes**	—	—	—

Notes: 1 ton = 0.9 metric ton. 1 lb = 0.5 kg.

Mitigation Measures

None available.

Residual Impacts

The impact would remain significant (Class I).

Pipeline Transportation

Under this scenario, operations of the EMT, vessels, and barge would cease, thus there would be no emissions from the EMT facilities. Impacts **AQ-1**, **AQ-2,** and **AQ-3** would be eliminated.

Impact AQ-5: Air Emissions from the Pipeline Construction

Pipeline construction would result in less than significant air emissions (Less Than Significant, Class III).

Impact Discussion

Under this alternative method of crude oil transportation, emissions would be reduced from the current operations for the operational phase, but emissions would increase for construction of the pipeline. Construction emissions would be due to fuel combustion by the pipeline construction machinery, offsite travel, and fugitive dust emissions due to soil handling during construction. Estimated emissions are summarized in Table 4.3-13. Emissions of the criteria pollutants would not exceed 25 tons (23 metric tons) per year, therefore no mitigation is necessary. As per the significance criteria, dust reduction mitigation measures, i.e. watering of exposed soil, would be required. The impacts would be considered adverse, but less than significant (Class III).

Table 4.3-13
Summary of the Pipeline Construction Emissions

Emissions Source	Peak Day Emissions, lbs/day					Annual (Total) Emissions, ton/year				
	CO	ROC	NO_x	SO_2	PM_{10}	CO	ROC	NO_x	SO_2	PM_{10}
Onsite Machinery	248.28	17.51	180.18	18.52	13.81	11.79	0.83	8.56	0.88	0.66
Offsite	25.13	5.91	11.22	0.15	0.75	1.19	0.28	0.53	0.01	0.04
Fugitive Dust	-	-	-	-	21.08	-	-	-	-	1.00
Total	*273.40*	*23.42*	*191.40*	*18.67*	*35.65*	*12.99*	*1.11*	*9.09*	*0.89*	*1.69*

Notes: 1 ton = 0.9 metric ton. 1 lb = 0.5 kg.

4.3.6 Cumulative Projects Impact Analysis

Impacts from the proposed Project were assessed in conjunction with the cumulative Projects identified in Table 4-1.

Impact AQ-6: Project would Contribute to Cumulative Air Quality Impacts.

The Project would contribute to the cumulative increase in emissions in the air basin, which is currently in non-attainment for ozone (Significant, Class I).

Impact Discussion

There are several industrial and oil development projects proposed in the South Central Coast Air Basin (see Section 4.0, Environmental Analysis). These projects are individually likely to have significant air quality impacts. The projects that are likely to have significant air quality impacts include the two liquefied natural gas (LNG) terminals (Projects No. 1, Cabrillo Port and No. 2, Platform Grace/Crystal Energy from Table 4-1), Projects No. 4, the Paredon Project, and No. 8, the Extended Ellwood Field Development. The Cabrillo Port and Platform Grace/Crystal Energy LNG terminal Projects are located 47 miles (76 km) and 29 miles (47 km) southeast from the EMT, respectively. The Paredon Project is located approximately 25 miles (40 km) southeast of the proposed project site. The Extended Ellwood Field Development Project is located in the proposed project area, but would eliminate the need for the EMT and barge operations.

There are potentially significant air quality impacts that have been identified for the Project. Mitigation measures would reduce the significance of the Project's impacts to a level below the relevant significance criteria. However, the Project would still contribute to the cumulative increase in emissions in the air basin, which is currently in non-attainment for ozone. Due to the distances of the other industrial projects that are likely to have significant air quality impacts, the proposed Project is not likely to contribute to significant cumulative air quality impacts.

Other residential, commercial, institutional, or recreational projects in the project area may have significant air quality impacts. For example, residential projects proposed for the project area would have significant air quality impacts since the homes would have wood-burning fireplaces rather than gas-burning ones. Combined with these residential projects, the proposed Project would have significant air quality impacts (Class I) because significant air quality impacts have been identified for the other projects, and because the area is in non-attainment for ozone.

Mitigation Measures

None available.

Residual Impacts

The impact would remain significant (Class I).

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